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TWO NEW SPECIES OF *CEUTHOPHILUS* FROM THE CARLSBAD
CAVE IN NEW MEXICO (ORTHOPTERA).

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The extensive caverns at Carlsbad, New Mexico, known as the Carlsbad Cave, were visited during the present year by an expedition under the auspices of the National Geographical Society. Mr. Vernon Bailey, of the Biological Survey of the U. S. Department of Agriculture, was a member of this expedition and at his invitation Mr. O. G. Babcock, of the Federal Bureau of Entomology, accompanied the party. Mr. Babcock's assigned duties were to collect insects in the caverns, which he assiduously did, the Orthoptera secured being submitted to the writer for determination. In addition to the material collected by Mr. Babcock there were also received a couple of specimens collected in the cave by Mr. Bailey.

All the above material, twenty-two specimens in all, comprises but two species, both belonging to the genus *Ceuthophilus*, and neither apparently hitherto described. They are therefore herein characterized as new species.

Ceuthophilus carlsbadensis, new species.

Description.—♂ and ♀. A medium sized unicolorously brown species. Head smooth, vertex without horn-like projection, being almost entirely smooth; eyes black, pyriform, the point ventral. Pronotum smooth.

Legs rather short and stout; fore femora noticeably longer than the pronotum and armed on the inner ventral margin with four or five distinct spines, the opposite margin entirely unarmed; middle femora armed beneath on each margin with four to six spines and above with a long genicular spine on the hind margin; hind femora in both sexes somewhat over three times as long as broad, the apical fifth only parallel, and armed beneath on both margins for almost the entire length with numerous short sharp triangular teeth, no longer than the basal width; above in the apical half these femora are furnished with numerous acute posteriorly directed spinule-like tubercles and the ventral sulcus is moderately broad; fore and middle tibiae in both sexes armed beneath with four pairs of spines inclusive of the apical ones, the anterior pair unarmed above, the intermediate pair with a single median pair of spines and sometimes with one or two additional ones, and the posterior ones, which are straight in both sexes, with a single median subapical spinule; the dorsal spines of the hind tibiae, of which there are five pairs, diverge very noticeably, are decidedly longer

than the width of the tibia and are separated by spaces approximately twice their length; the inner apical calcars are longer than the outer ones, the median ones the longest, the inner median one being one-half as long as the posterior metatarsus; tarsi long, those of the fore and middle legs about two-thirds as long as the tibiae and those of the hind legs one-half as long as the tibia; posterior metatarsus approximately as long as the rest of the segments together, the second segment twice as long as its apical depth and about twice as long as the third segment.

Abdomen smooth in both sexes; ninth dorsal segment in the male, as viewed from above, completely hidden beneath the eighth, which is apically prolonged above and slightly beyond the ninth and with the apex truncate and rather conspicuously swollen; supraanal plate of both sexes small, triangular; depressed; subgenital plate of male large and subquadrate, the apex deeply notched triangularly, the lateral angles thick and broadly rounded, of the female small, triangular with the apex rounded and entire; cerci of both sexes simple, about as long as the pronotum and twice as long as the femoral width; ovipositor short, the ventral teeth of the inner valves five in number, counting the apical curved ones, the terminal three the longer and all rather slender, almost entirely chitinized and sharply pointed, the outer valves at the apex on the dorsal margin with a short sharp chitinous upwardly and posteriorly directed point.

Measurements.—Length, total from front of head to end of abdomen, ♂ and ♀, 15 mm.; pronotum, ♂ 4, ♀ 4.75 mm.; anterior femora, ♂ 6, ♀ 7 mm.; posterior femora, ♂ 10, ♀ 11 mm.; posterior tibiae, ♂ 11, ♀ 12 mm.; ovipositor, 6 mm. Width, posterior femora at widest part, ♂ 2.3 mm., ♀ 3 mm.

Type, Allotype and Paratypes.—Cat. No. 27476 U. S. N. M.

Habitat.—Carlsbad Cave, Carlsbad, New Mexico.

Described from seven specimens, one adult male, three adult females, and three male nymphs, as follows: type male, and allotype female (both adults), April 24, 1924, bearing the collector's No. 11241; Paratype A, adult female, Apr. 26, Coll. No. 11512; Paratype B, adult female April 23, Coll. No. 11239; paratypes C, D and E, immature males, same data as the type and allotype.

Structurally this uniformly somber colored species seems the most nearly allied to the eastern *C. nigricans*. There are a number of very distinct characters, however, which will serve to separate the opaque unicolorous western form from its shiny brown and usually dorsally striped eastern relative. Thus *nigricans* has but one ventral spine in the inner margin of the fore femora, rarely two, the teeth of the ovipositor are less chitinized and not quite so sharp, the posterior tarsus is but about one-third as long as the corresponding tibia, the middle apical calcar on the inner side of the hind tibia is two-thirds or more as long as the posterior metatarsus and the subgenital plate of the male is apically entire or, usually, briefly triangularly impressed, all of which characters differ from those of the species above described.

The male of *carlsbadensis* also seems somewhat allied to *aridus* Bruner as described by the author of that species; *aridus*, however, has the cerci no longer than the greatest width of the posterior femora while in *carlsbadensis* they are twice as long, and the posterior tarsi are about one-third as long as the corresponding tibia instead of about one-half as long as they are in the cave species. There does not appear to be much resemblance between *carlsbadensis* and the species described under the specific name *ensifer* by Packard from the Nickajack Cave in Tennessee. This latter species, females only of which are known, has been recorded from New Mexico,¹ but probably wrongly so, though just what species was involved is unknown.

As the exact data given in the collector's notes accompanying the insects taken in the Carlsbad Cave may later prove of some value and interest, it has been thought best to include them in the present paper. The notes covering the material comprising the above species are as follows:

11239. "Two crickets; the light colored one² taken from between "Devil's sink hole"³ and Kings Palace; the dark colored one near "Devil's sink hole, April 23." (Two females in this lot.)
11241. "April 24, crickets taken from walls and floor of Cavern between first and second shaft. One large and one young cricket observed on cactus rat carcass that was placed in cave as bait. The young cricket was apparently feeding." (One adult pair and three nymphs.)
11512. "April 26, 1924. Crickets collected about 50 ft. east of West shaft. Depth 170 ft." (One adult female.)

Ceuthophilus longipes, new species.

Description.—♂ and ♀. A very long slender-legged medium-sized species of a uniform yellowish brown color. Head with vertex scarcely at all swollen, without any horn-like projection; eyes black, pyriform, the point ventral, the sides straight, or slightly concave. Pronotum smooth. Legs unusually long and slender; fore femora fully twice as long as the pronotum and wholly unarmed above and beneath, without even genicular spines; middle femora also unarmed beneath but above furnished with a long genicular spine on the caudal margin; hind femora very slender, being about six times as long as broad and with about the apical third subparallel, beneath in both sexes entirely unarmed on both margins, the intervening sulcus very narrow, the lateral carinae in basal part almost or quite meeting, and above the surface is smooth, without any raised points in either sex; fore tibiae unarmed above except for the apical spines and beneath armed with three pairs of spines in addition to the apical ones, the first pair situated about the middle, one near the apex, and one pair between the others, a little nearer the subapical pair; intermediate tibiae armed above with a

¹Scudder & Cockerell. Proc. Davenport Acad. Sci., vol. ix, p. 56 (1902).

²The "light colored one" mentioned here refers to the second species, as described below.

³More commonly known as the "Devil's Den."

single pair of spines just beyond the middle, of which one on the caudal margin is often missing, and beneath armed as in the anterior ones; posterior tibiae decidedly longer than the corresponding femora, straight in both sexes, armed beneath near the distal end with a single small median spine and above with four pairs of spines in addition to the apical ones, the spines very moderately divergent and about twice as long as the tibial width; the apical calcaria are long, the inner ones a little longer than the outer ones, the median ones much longer than the others, the inner median one twice as long as the dorsal one on that side and three times as long as the ventral one, being approximately one-half as long as the posterior metatarsus. Tarsi very long and slender, the anterior and intermediate ones about two-thirds as long as their tibiae and the posterior ones about one-half as long, the metatarsi longer than the other segments together and the second segment of the hind tarsus about four times as long as the apical depth and twice as long as the third segment. Abdomen smooth in both sexes, showing no dorsal roughness of any kind; ninth dorsal segment in the male, as viewed from above, extending distinctly beyond the eighth segment, apically briefly extended and very broadly rounded with the posterior margin very slightly concave mesially; seventh and eighth dorsal segments very slightly tectate and posteriorly very gently produced; cerci simple, somewhat longer than the femoral width and strongly swollen in the basal half; supraanal plate mostly concealed in both sexes, apparently small and flat; subgenital plate of male large and broad, posteriorly very broadly and shallowly notched, of female small, transverse, apically rounded; ovipositor rather long and slender, almost three times as long as the pronotum, the outer valves apically terminated by a sharp upwardly and backwardly directed point and the inner valves each with four slender sharp teeth in addition to the apical decurved hook.

Measurements.—Length, total from front of head to end of abdomen, ♂ and ♀, about 14 or 15 mm.; pronotum, ♂, 3, ♀, 3.5 mm.; anterior femora, ♂ and ♀, 7.25 mm.; posterior femora, ♂ and ♀, 12 mm.; ovipositor, 10 mm.; width, posterior femora at widest point, ♂, 2, ♀, 2.1 mm.

Type, Allotype and Paratypes.—Cat. No. 27477 U. S. N. M. Paratypes (A and B) also in U. S. Biological Survey.

Habitat.—Carlsbad Cave, Carlsbad, New Mexico.

Described from fifteen specimens, six male and seven female, apparently adult and one male and one female nymph, as follows: type and allotype, adult male and female, April 23, 1924, collected by O. G. Babcock and bearing collector's No. 11508; paratypes A and B, adult male and female with same data as type and allotype; paratype C and D, adult and half grown nymph females, same data as type and allotype but with No. 11511; paratype E, adult female, same locality on April 24 and with No. 11242; paratype F, same locality data as type and allotype but with No. 11239; paratype G, immature male, probably in first stage, from same locality as the rest and bearing No. 11230; paratypes H, I, J, K, L and M, two males and four females, all adults from the same locality as the rest but taken by Mr. Vernon N. Bailey and bearing no collector's number.

The egg of this insect, one of which was taken from the abdomen of the female collected by Mr. Bailey, is yellowish in color, measures 3 mm. in length by 1 mm. in width and is a little thicker at one end.

This species, some specimens of which were taken in the furthest recesses at which insect life was found and all well beyond the light-penetrated regions of the cavern, does not appear very closely allied to any described form of the genus. The long slender legs are somewhat suggestive of *C. ensifer* Packard but this is a decidedly smaller form with a proportionately much longer ovipositor. The long legs also calls rather vaguely to one's mind the species of the genus *Hadenocetus*, but the legs in that genus are conspicuously more elongate than in the present insect and the terminal palpal segment is cleft only apically in dried material, in the present insect that segment being cleft on the apical three-fourths, as in all the species of *Ceuthophilus*.

The collector's notes on the specimens comprising this species are as follows:

11230. "Young cricket taken from a point beyond the Devils Sink Hole in absolute darkness. April 23." (A male nymph, probably first stage.)
11239. This number covered both the above described species and is entered under the first, which see.
11242. "April 24, '24. Pale cricket taken midway between 1st and 2d shaft. Cricket quite active." (One adult female.)
11508. "April 23, 1924. Crickets collected in Carlsbad cavern between west opening and west shaft." (Two adult pairs.)
11511. "April 23, 1924. Crickets collected from walls and floor of King's Palace. This is the furthest and darkest point where insect life was found." (Two females, one an adult and one a half grown nymph.)

Regarding the habits of the above described crickets Mr. Bailey writes that they are abundant throughout the cave, even to the furthest corners miles from any trace of light. They were usually crawling along on the floor or hidden beneath rocks, or in crevices, etc. The very long antennae were always extending out ahead when the insects moved. They ate scraps of discarded luncheons, fresh meat placed as bait for other insects and rolled oats used as bait for mice.

CHANGE OF NAME (HYMENOPTERA).

By R. A. CUSHMAN, U. S. Bureau of Entomology.

I find that my *Ephialtes (Itopectis) pacificus* is preoccupied by *Ephialtes pacificus* Harrington, and therefore rename it *Ephialtes (Itopectis) esuchus*, new name.
